

Abstract of the Disclosure

A bistable nematic liquid crystal device cell is provided with a surface alignment grating on at least one cell wall and a surface treatment on the other wall. Such treatment may be a homeotropic alignment or a planar alignment with or without an alignment direction, and zero or a non zero pretilt. The surface profile on the monograting is asymmetric with its groove height to width selected to give approximately equal energy within the nematic material in its two allowed alignment arrangements. The monograting may be formed by a photolithographic process or by embossing of a plastics material. The cell is switched by dc pulses coupling to a flexoelectric coefficient in the material, or by use of a two frequency addressing scheme and a suitable two frequency material. Polariser's either side of the cell distinguish between the two switched states. The cell walls may be rigid or flexible, and are coated with electrode structures, e.g. in row and column format giving an x,y matrix of addressable pixels on the cell.